

**Abstract**

Process for polymerizing at least one olefinic monomer selected from ethylene, propylene and 1-butene in a loop reactor in the presence of a polymerization catalyst at from 20 to 150°C, but 5 below the melting point of a polymer to be formed, and a pressure of from 43 to 80 bar, where the polymer formed is present in a suspension in a liquid or supercritical suspension medium and wherein the suspension is circulated by means of an axial pump, wherein the polymerization is carried out at an average solids concentration in the reactor of more than 53% by weight, in the case of continuous product discharge, and at an average solids concentration in the reactor of 10 more than 45% by weight, in the case of discontinuous product discharge, and wherein the polymerization is carried out at an ethylene concentration of at least 10 mol%, based on the suspension medium.

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